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# ANNUAL REPORT

## FISCAL YEAR 1985

## LOWER SNAKE RIVER

## COMPENSATION PLAN OFFICE

Boise, Idaho

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# I. INTRODUCTION

The Lower Snake River Compensation Plan Office was established with the closing of the Boise Area Office in September 1982. The Office's prime responsibility is to administer U.S. Fish and Wildlife Service (FWS) field programs for State fisheries operations under the Lower Snake River Fish and Wildlife Compensation Plan.

The Lower Snake River Fish and Wildlife Compensation Plan (LSRCP) was authorized by the Water Resources Development Act of 1976 (90 Stat. 2917). The LSRCP was developed to replace fish and wildlife losses caused by the construction and operation of Ice Harbor, Lower Monumental, Little Goose and Lower Granite Lock and Dam projects on the lower 150 miles of the Snake River in Washington and Idaho.

Construction responsibility for the LSRCP was assigned to the Walla Walla District, U.S. Army Corps of Engineers (Corps), while responsibility for fisheries operation and maintenance funding (O&M) was to be accomplished by "one of the Federal fisheries agencies". The question of O&M funding was settled in 1977 with the signing of an interagency agreement by the Corps, National Marine Fisheries Service, and FWS, stating that the FWS would budget for and administer O&M for LSRCP fisheries programs (responsibility for administration and O&M for wildlife programs remains with the Corps).

The Corps' estimated-costs for development of the authorized Compensation Plan are $177 million for off-project features, while FWS estimated annual costs for fish facilities O&M are $7.6 million. All anadromous fisheries compensation and most resident fisheries compensation are allocated to project power costs and are reimbursed to the treasury from Bonneville Power Administration (BPA) power revenues.

The LSRCP legislation authorized both sufficient anadromous fish hatcheries and associated trapping and holding facilities to return 18,300 fall chinook adults, 58,700 spring and summer chinook adults, and 55,100 steelhead adults back to the project area, and sufficient resident fish hatcheries and stream enhancement projects to produce 93,000 pounds of trout annually to replace lost resident sport fisheries in Washington and Idaho.

The program requires expansion or construction of twelve hatcheries and numerous satellite facilities in Idaho, Oregon, and Washington. Idaho Department of Fish and Game will operate four hatcheries, Oregon Department of Fish and Wildlife three hatcheries, Washington Department of Fisheries one hatchery, Washington Department of Game two hatcheries, and Fish and Wildlife Service two hatcheries. Brief descriptions of individual hatchery operations follow (FY 85 hatchery fish production and other pertinent operational information is listed on Table 1):

## Clearwater Anadromous Fish Hatchery - Idaho

During the year conceptual design was continued on Clearwater Fish Hatchery design. Modifications were proposed to provide supplemental rearing water from two pipelines from Dworshak Reservoir. The purpose of the supplemental water is for egg incubation and early rearing in an attempt to avoid infectious hematopoietic necrosis (IHN virus) disease (production water will come from North Fork and Middle Fork Clearwater Rivers). The disease is endemic in the Clearwater River system and has caused catastrophic losses of steelhead fry production at Dworshak NFH, which is located adjacent to the proposed Clearwater hatchery site. The hatchery is designed to produce 1,369,500 spring chinook smolts weighing 91,300 pounds, and 2,500,000 steelhead trout smolts weighing 350,000 pounds with a staff of twelve. Scheduled for completion in November 1988, the hatchery is expected to cost approximately $26,443,000 to construct and $1,350,000 annually for O&M. Conceptual design work is complete; hatchery design is scheduled to start in December 1985. Three satellite fish facilities are associated with the hatchery: Red River, Crooked River and Powell; all scheduled for completion in March 1988.

## Magic Valley Fish Hatchery - Idaho

To be located on the Snake River near Buhl, the facility is designed to produce 2,000,000 steelhead trout smolts weighing 291,500 pounds annually. Facility design is complete, and construction started on the hatchery's spring water supply during the summer of 1985. The hatchery is scheduled for completion in October 1987, at an expected cost of $9,800,000. O&M plans call for a staff of eight, and an annual budget of $700,000.

The hatchery is being constructed on a commercial hatchery site purchased by the Corps in March 1981. Steelhead have been produced for the Magic Valley program at the commercial hatchery site since December 1982. However, during 1985, fish production was transferred from the commercial hatchery site to unused raceways at Hagerman NFH (approximately 232,000 fish are being reared for the Magic Valley program at Hagerman NFH). Sawtooth hatchery and East Fork Salmon River Satellite (both completed) will serve as juvenile release and adult trapping sites for the hatchery program.

## McCall Fish Hatchery - Idaho

The hatchery was completed in 1980 at a cost of $5,053,000. It is located along the Payette River near McCall with adult trapping facilities on the South Fork of the Salmon River. McCall is designated to produce 1,000,000 summer chinook smolts weighing 61,300 pounds and operates with a staff of four and an O&M of $340,000. Two problems surfaced in regard to fish cultural

operations at McCall. The first, an annual recurring fry mortality referred to as "Spring Thing," has been alleviated with the additions of pantothenic acid to the fish food. Diet studies to determine this feed supplement deficiency were conducted with LSRCP evaluation study funds. The second problem, overwinter accumulations of snow and ice on the forest roads leading to the South Fork smolt release site has been resolved with a snow removal contract with Valley County.

## Sawtooth Fish Hatchery - Idaho

The hatchery is located on the Upper Salmon River near Stanley and was completed in January 1985 at a cost of $12,163,000. In addition to producing 2,235,000 spring chinook salmon smolts weighing 149,000 pounds at Sawtooth, the staff will also operate a major satellite facility on the East Fork of the Salmon River. The satellite will trap adult steelhead for Hagerman NFH and Magic Valley Hatchery, in addition to trapping spring chinook adults for Sawtooth. An eye fluke organism endemic to the upper Salmon drainage was considered a potential fish cultural problem for Sawtooth hatchery, but studies prior to construction determined that this organism would not be a serious problem in a raceway environment. To date, eye flukes have not been a problem, but the most crucial period will be during warm water rearing in the spring-summer months. Operation and maintenance costs of the hatchery are estimated to be $500,000 annually with a staff of eight.

## Irrigon Fish Hatchery - Oregon

Irrigon hatchery is located on the Columbia River near Umatilla, and was completed in April 1985 at a cost of $11,292,000. The groundwater supply was not adequate for the entire program of 1,377,000 steelhead smolts weighing 279,000 pounds so an expansion of Oregon's Wallowa hatchery was also necessary. The Wallowa expansion was completed in November 1985, and will produce approximately 50,000 pounds of steelhead smolts for the Irrigon program. In addition to Wallowa hatchery, satellite fish facilities for the Irrigon program are located at Big Canyon, Lookingglass, and Little Sheep Creeks. Operation and maintenance costs of the Irrigon/Wallowa steelhead production program are estimated to cost $610,000 annually with a staff of eleven.

## Lookingglass Fish Hatchery - Oregon

The hatchery is located on Lookingglass Creek near Elgin, Oregon, and was completed in 1982 at a cost of $4,965,000. A major problem at the hatchery for the past two years has been a loss of production water from Lookingglass Creek due to ice blockage at its intake. A warm water well was recently completed which is to supply sufficient warm water to alleviate serious ice collection at the intake. An ice problem was resolved with the

warm well water this year on the day that the well was first available for use. It appears that there will be sufficient well water available to overcome this serious problem.

The hatchery and its satellites on Big Canyon Creek and the Imnaha, Lookingglass and Wallowa Rivers requires a staff of four and an annual O&M budget of $370,000.

## Lyons Ferry Fish Hatchery - Washington

Located at the confluence of the Palouse and Snake Rivers, this facility is two hatcheries in one. Phase I was completed in September 1982 and is being operated by WDG. It is designed to produce 1,164,000 steelhead trout smolts weighing 116,400 pounds and 45,000 pounds of rainbow trout.

Phase II at Lyons Ferry was completed in September 1984. Phase II provides facilities for operation by WDF in which 9,162,000 fall chinook smolts weighing 101,800 pounds and 132,000 spring chinook smolts weighing 8,800 pounds will be produced.

A renovation of Tucannon State Fish Hatchery was completed in 1985 in order that an additional 41,000 pounds of rainbow trout can be produced by WDG. Its operation will be as a satellite of Lyons Ferry Phase I. The remaining 7,000 pounds of rainbow trout production stipulated in the compensation plan is coming from stream enhancement structures funded by the Corps and constructed by they WDG.

Lyons Ferry was constructed at a cost of $22,257,000. To operate the hatchery and its satellites at Tucannon, Curl Lake, Cottonwood, and Dayton Pond will take eleven people and an annual O&M budget of $1,490,000.

During the first years of operation a problem of pump impeller erosion caused by water chemistry has plagued the hatchery. The Corps is dealing with this as a latent design defect and is attempting to find an alloy not susceptible to electrolysis. Magnesium oxide deposits in the raceways have also been a problem for the hatchery: the Corps is also investigating this.

## Dworshak National Fish Hatchery - Idaho

An expansion of facilities at Dworshak NFH was completed by the Corps in February 1982 at a cost of $1,710,000. Designed to produce 1,050,000 spring chinook salmon smolts weighing 70,000 pounds, the expansion requires a staff of three and will cost approximately $154,000 per year for O&M.

**Hagerman National Fish Hatchery - Idaho**

Hagerman NFH has been expanded by the Corps of Engineers to produce 2,400,000 steelhead trout smolts weighing 340,000 pounds while retaining the capacity to produce 100,000 pounds for FWS production commitments other than LSRCP. The $8,486,000 expansion was completed in June 1984. An estimated $510,000 annual O&M budget and a staff of nine is required. The hatchery is currently producing steelhead for the Magic Valley program in raceways constructed for other FWS commitments.

Consistent with the desires of the administration and Congress, the Corps proposes to transfer title to the above State operated hatcheries and satellite fish facilities to the Fish and Wildlife Service. The Corps is currently conveying operational responsibility for constructed fish facilities to the FWS by a Memorandum of Understanding.

## II. HIGHLIGHTS FOR FY 1985

The LSRCP Office made some very important changes with our funding agreement administration in FY 1985. Among the most important is that we went from a mixture of Contracts and Cooperative Agreements to all Cooperative Agreements. This change was initiated to help us speed up the funding agreement process and get the agreements in place in a timely manner. Not only did we convert to all cooperative agreements, but we consolidated all Operation and Maintenance agreements for each agency under one Cooperative Agreement and all Evaluation Studies for each agency under a second agreement, reducing considerably the total number of agreements to process. With these two improvements, we and CGS were able to get all of the O&M agreements and the one evaluation study agreement to begin October 1 out for signature on time and in place by the beginning of the new FY. This was a first for us and quite an accomplishment.

With the change from Contracts to Cooperative Agreements in 1985, the LSRCP Office assumed more administrative authority, particularly with payments. We now sign all payments and send them directly to the Denver Finance Center (DFC), rather than sending them to CGS first to be signed and then sent to the DFC. The DFC has worked with us in speeding up the payment process by having us date the reimbursements on the day they are signed and attaching "SPECIAL" tags. We have had numerous comments from the State agencies about the improvement in billing-to-payment turn-around-time since implementing these new procedures. With the exception of Final Billings, most payments are now being received in less than one month. With the continued assistance from the Regional Office (CGS) and the Denver Finance Center, we hope to keep improving our system.

Another important accomplishment was the resolution of the problem of program income in our agreements (fund received from employee quarters rental). In previous years we did not have a clear cut policy on how to deal with program income at the facilities: as a result, it remained unspent on the books. This year when negotiating our FY 86 agreements, we finally came up with a solution that met with Regional Office (CGS) and State approval. The new agreements have this statement under Service Obligations: *"Reimburse (agency) in the amount of (budget $), and authorize the expenditure of (program income $) in program income for a total spending authority of (budget $ and program income $) during the fiscal year."* The inclusion of this statement authorizes the expenditure of program income at the facility and allows the agencies to bill for the entire budget amount, resolving a problem we have faced for a number of years.

## III. OPERATIONS

A total of $4,775,680 was available to the LSRCP program in FY 1985, $280,680 in FY 1984 carryover funds and $4,495,000 in FY 1985 appropriated 4710 funds. This total included $925,197 for LSRCP Evaluation Studies, $140,000 for Boise Office Management and Coordination, $166,000 for Youth Conservation Corps and Regional Office, and the balance for hatchery operation and maintenance.

Nine contracts and seven cooperative agreements were drafted and finalized during this fiscal year. Cooperative Agreements were used to convey hatchery O&M funds, and contracts were used to convey hatchery evaluation studies. However, in future years the use of contracts will be discontinued. Cooperative Agreements with annual renewal options, where applicable, appear to be the most feasible way of improving our funds administration.

Potentially serious fish diseases were identified in several LSRCP fish stocks during the year. In Oregon, IHN virus was identified in three of six egg takes at Little Sheep and the last egg take at Wallowa, this is the first positive IHN virus found in the Imnaha and Wallowa summer steelhead. In September, IHN virus was identified in spring chinook salmon at Lookingglass hatchery.

IHN was also identified in Tucannon hatchery fish and in rainbow trout at Lyons Ferry. IPN was found in one sample of McCall summer chinook.

BKD continues to cause major losses in LSRCP hatchery spring chinook programs. Studies are underway to determine if there are some fish cultural operations that may be helpful to reduce BKD related mortalities in hatchery spring chinook.

In addition to direct BKD losses, spring "dropout" accounted for the loss of 76,700 spring chinook at Dworshak NFH during May. Losses were particularly severe in the progeny of BKD positive parents.

In addition to disease losses, several fish mortalities related to problems due to either hatchery design or equipment failure resulted. Approximately 250,000 Wallowa stock sac fry were killed at Irrigon in the incubation trays due to chlorination of a domestic well. The chlorine apparently seeped through the ground from the domestic well to the production well and was pumped to the fry and eggs. Wallowa hatchery lost about 65,000 summer steelhead smolts (Wallowa stock) when the river eroded around the intake structure, allowing two large holding ponds to partially dewater; and a power failure at Irrigon Hatchery resulted in the loss of 420,000 Wallowa stock steelhead (BY 1984) and 20,000 Imnaha steelhead.

During the year compensation plan hatcheries produced 564,000 summer chinook smolts, 3,384,000 spring chinook smolts, 1,318,000 fall chinook smolts, 4,107,000 steelhead smolts and 218,000 rainbow trout. A breakout of the production, and adult returns by hatchery is located on Table 1.

## IV. EVALUATION STUDIES

In 1985 all agencies had fully operational evaluation studies underway. Although $948,000 had originally been authorized for the FY 1985 LSRCP evaluation program, congressionally-mandated budget reductions lowered the funding level by 2 percent to $929,000. By the end of the fiscal year, a total of $925,197 had been obligated for 12 studies conducted by the IDFG, ODFW, WDG, WDF, and FWS (Table 2). The following is an overview of the evaluation program in FY 1985 followed by a synopsis of each agency's evaluation program.

The Evaluation Study Guidelines, which were drafted in 1983 to provide the overall direction for evaluation studies, were put in final draft form and adopted by the Evaluation Studies Committee. A copy of the final guidelines may be obtained from the LSRCP Office after January 15, 1986.

A pattern for regular Evaluation Study Committee (ESC) quarterly meetings was established in 1985. Although the ESC consists of a single representative from each operating agency and the Indian tribes, the meetings usually included additional staff members from each agency and occasionally visitors. Three ESC meetings were conducted in FY 1985 along with several partial committee meetings to discuss specific topics.

A five-year planning effort was also initiated in FY 1985. By the end of the fiscal year each operating agency had drafted a five-year plan for evaluating the portion of the LSRCP program under their jurisdiction. We hope that long-range planning with

an annual plan update will allow us to better manage the program under the constraints of reduced budgets combined with a growing program.

Several major equipment purchases were made by agency coordinators during FY 1985. Most programs acquired microcomputers for storage and analysis of data and word processing. Although software and computer brands vary, we will eventually require that data report forms be similar to allow easy comparison of data among agency programs. Acquisition of trailer shells completed the first step towards construction of two marking trailers. Both will be multi-purpose, allowing coded-wire tagging, adipose fin clipping, and freeze-branding. One trailer will be assigned to WDF and will be used for the WDF and WDG LSRCP marking programs at Lyons Ferry FH. The second trailer will be assigned to ODFW and be used at LSRCP facilities in eastern Oregon.

## IDFG's Evaluation Study Program

Two categories of evaluations were conducted in Idaho in FY 1985: hatchery operation and production studies and other investigations. Hatchery operation and production studies are being conducted to ensure that accurate and adequate monitoring of hatchery practices occurs so the best, most cost-effective mode of operation for each hatchery is implemented. The major tasks include monitoring and evaluation of hatchery loading, size and time of release studies, production tagging, and diet and disease monitoring and investigative studies. Most hatchery operation and production evaluations are long-term programs because constant monitoring is required to identify problems before they cause catastrophic fish losses.

Because of the number of hatcheries and size of the program in Idaho, IDFG divided their hatchery operation and production activities into three studies: *Hatchery Evaluations* (general monitoring, size and time of release evaluations, etc.). *Identification of LSRCP Stocks* (all tagging work), and *Fish Health, Nutrition, and Hatchery Management* (disease and nutrition monitoring and evaluating). The *Hatchery Evaluation Study* was initiated in 1982 and will be funded to some degree through the life of the hatchery program. The FY 1985 study report is not yet available; reports from previous years are listed in Section XI of this report. Although most studies require several years of tag returns to yield results, preliminary results of size of release studies indicate large male steelhead smolts (average 260mm) tend to residualize at greater rate than smaller (average 200mm) smolts. Further studies will provide data regarding survival to adults for these size categories.

IDFG's tagging program resulted in the coded-wire tagging of about 680,000 and freeze-branding of about 265,000 salmon and steelhead in 1985. In addition to production tagging for adult return studies, fish were marked for size and time of release

studies, migration timing studies, and nutrition and disease analyses. Production tagging will be needed annually for a number of years and than intermittently for the life of the hatchery program. Tagging for special studies will be required intermittently for the life of the project.

Idaho's disease and nutrition study was initiated in FY 1984 and funded through FY 1985 with 1984 monies. In FY 1985 a temporary disease laboratory was set up at the Dworshak Fish Health Center and a disease biologist was hired. A permanent disease facility will be constructed by the Corps, possibly at Magic Valley Hatchery or perferably, a suitable site not associated with a LSRCP hatchery water supply. Disease monitoring was conducted at McCall and Sawtooth FH's and at their satellite facilities in 1985. In FY 1986 this program will be absorbed as an operational expense except for specific nutrition and disease investigations, which will be funded under the evaluation program.

Other investigations, the second category of Idaho studies, are being funded to address specific needs and are often short-term. In late 1984 Idaho began a creel study to assess the LSRCP contribution to the steelhead fishery, to estimate the spawning escapement of LSRCP fish, and to obtain data for managing the fishery while protecting wild stocks. This creel study is also a major means of obtaining fish tagged as fingerlings under the production and other studies discussed above. The study, called *Hatchery-Wild Composition of the Idaho Steelhead Harvest,* was funded through 1985 and will be continued annually until compensation goals have been met and periodically thereafter.

The *South Fork Salmon River Fishery Restoration Study* was initiated in FY 1984 to determine if the wild South Fork steelhead population should be supplemented with LSRCP hatchery plants. The study is scheduled to be completed by FY 1987. A report of the first segment of study is available (see Section XI).

In FY 1985 the IDFG completed their segment of the "Spring Thing" study, a three-year program funded entirely with 1983 funds. This effort was a joint study with the FWS to identify the symptoms of, causes of, and measures to control early mortality of summer chinook fry at McCall FH. The results of feeding trials and histopathology, virology, and hemotology studies suggested that a deficiency of a B vitamin named pantothenic acid was the cause of the so-called "spring thing" mortality. Preliminary reports are available at the LSRCP Office (see Section XI).

## ODFW's Evaluation Study Program

In contrast to IDFG's program, ODFW conducts nearly all of their evaluation under one "umbrella" study, *An Evaluation of the LSRCP Program in Oregon.* ODFW began a few evaluations under this study in 1983 but full-scale studies did not really begin until

FY 1984. Their evaluation program encompasses monitoring and evaluation of hatchery practices, size of release studies, marking activities (CWT, branding), disease monitoring efforts, and creel census studies to determine LSRCP contribution to Oregon's steelhead fishery and to obtain tagged fish. In addition, the principal investigator for this study coordinates the broodstock selection, egg-taking procedures, and outplanting program for Oregon's LSRCP program, the only anadromous hatchery program in NE Oregon. A copy of the FY 1984-funded program (from 1 April 1984 to 31 March 1985) is being printed and will be available at the LSRCP office.

Two short-term studies were initiated by ODFW in 1984 and continued into 1985: *Evaluation of the Benefits Provided by Presmolt Releases in the Grande Ronde and Evaluation of Benefits Provided by Reprogramming Spring Chinook Smolts from Lower Columbia Hatcheries.* Both are short term (about 4-year) studies involving CWTing, tag recovery, and analyses of returns. The presmolt study will help determine the efficacy of releasing presmolts in the summer and fall. The reprogramming will help determine the efficacy of bolstering the LSRCP program by releasing Carson NFH smolts in the Grande Ronde and Imnaha River systems. The report on FY 1984-funded activities for these two studies (from 1 April 1984 through 31 March 1985) is being printed and will be available from the LSRCP office in January.

A proposed study to establish the timing of seawater tolerance for LSRCP steelhead produced at Irrigon FH was not initiated as planned in FY 1985 due to lack of evaluation funds. Oregon believes this study has merit and, if funding is available, intends to resubmit it for funding in FY 1986.

## WDF's Evaluation Study Program

The Department of Fisheries field evaluation program was initiated in 1985 when a principal investigator was hired and stationed at Lyons Ferry FH. As a result, their *Lyons Ferry Evaluation-Salmon* Program has just begun. Their evaluation program is similar to Oregon's in that all major evaluations will be conducted under one multiple-objective study, including monitoring and evaluation of hatchery practices, juvenile outputs, adult returns and contribution to fisheries, time and size of release studies, and impacts of hatchery releases on wild stocks. Because the hatchery program is being built entirely with native fall and spring chinook stocks, special attention is being paid to quantifying genetic variables. A smolt trap is being constructed with FY 1985 monies and will be operated on the Tucannon River (jointly with WDG) in 1986 to monitor numbers and timing of outmigrating spring chinook and steelhead. Some FY 1985 funding is also being used for marking trailer hardware and five CWT machines. A report of FY 1984-funded activities is available at the LSRCP office (see Section XI).

## WDG's Evaluation Study Program

Much like ODFW and WDF, the bulk of the Department of Game's evaluation program has been and will be conducted under one study, *Lyons Ferry FH Evaluation Study - Steelhead.* This long-term program includes objectives for evaluating both the steelhead and resident trout hatchery programs, with the steelhead objectives having the highest priority and requiring the most funding (about 90 percent of the total).

Because the steelhead and trout programs have been underway at Lyons Ferry since 1983, the hatchery evaluations and related field studies are also well underway. Major concerns which have surfaced as a result of recent evaluations have been the poor brood stock returns to the Lyons Ferry ladder and large number of residuals below satellite release facilities. Studies will be conducted in 1986 to determine if chemical treatments will be needed to improve homing of adult fish back to the ladder. Some reports for past studies are available from the LSRCP office (see Section XI).

In lieu of 7,000 pounds of hatchery capacity for resident trout, WDG was funded by the Corps to build instream improvement structures for natural fish propagation. In FY 1984 and ending in FY 1985 the LSRCP Office and the Corps jointly funded an evaluation of the status of the structures and of their success in compensating for resident trout losses. This type of evaluation will be conducted periodically (every 4 to 6 years) until sufficient data are available to ensure that the 7,000 pound compensation goal for natural trout production has been met. A report is available at the LSRCP office on the 1984-1985 studies (see Section XI).

## V. CONSTRUCTION ACTIVITIES

Sawtooth Fish Hatchery, Idaho was formally dedicated August 3, 1985. LSRCP Coordinator Higgs spoke at the dedication which was attended by the LSRCP Contract Specialist and Evaluation Studies Coordinator.

Irrigon Fish Hatchery, Oregon, was completed in April 1985. Wallowa Hatchery a major satellite facility of Irrigon was also completed in the fall of 1985.

Tucannon Hatchery, Washington, a major satellite facility of Lyons Ferry Phase I (WDG), was completed this year and was formally dedicated in June 1985. Lyons Ferry satellites at Curl Lake and Cottonwood Creek were also completed in the spring of 1985.

Lookingglass Fish Hatchery, Oregon, has had severe icing problems at the river water supply intake. A well was completed this year that will provide sufficient warm water to reduce ice buildup problems.

The preliminary design memorandum for Clearwater Anadromous Fish Hatchery was reviewed. Final design should be completed in 1986. The hatchery is scheduled for completion in March 1988. Three hatchery satellites at Red River, Crooked River, and Powell are also scheduled for completion in 1988.

Design is complete and construction was started on the Magic Valley Hatchery, Idaho, water supply in the spring of 1985. Construction of the hatchery is scheduled to begin in late 1985 and to be completed in November 1987.

The visitor facilities and cleanup contract work was completed at Hagerman NFH in the summer of 1985.

Work was completed on stabilizing the entrance road to the South Fork Salmon River satellite in the fall of 1985.

Pertinent data relating to hatchery design is included in Table 3.

## VI. FWS COOPERATIVE PROGRAMS

The LSRCP program funded a variety of studies with other FWS stations. All these were categorized as evaluation studies and most were funded to investigate and solve specific hatchery production problems.

The Dworshak Fisheries Assistance Office (DFAO) was funded in FY 1985 to conduct hatchery monitoring and evaluation studies at Dworshak (spring chinook) and Hagerman NFH's similar to those conducted by the state agencies (see Section IV). Their study, *Evaluation and Technical Coordination for FWS LSRCP Hatchery Programs,* is a long-term effort designed: 1) to aid NFH's with the development of a data base system for hatchery management and 2) to define and solve cultural and management problems affecting LSRCP success.

DFAO also was funded to conduct a one-year study to help determine if IHN virus infecting Dworshak steelhead fry is coming from infected fish above the hatchery water supply. Results of this study are being used to help design the LSRCP Clearwater FH. The DFAO study required collecting and testing Dworshak Reservoir and North Fork salmonids and conducting rearing tests using reservoir water, river water and ozonated water. A report on this effort is available for the LSRCP office or DFAO (see Section XI).

Two studies were funded with the Idaho Cooperative Fisheries Unit. *An Evaluation of Hatchery Practices and Methods to Control Bacterial Kidney Disease (BKD) in Hatchery Stocks of Snake River Chinook Salmon* was initiated in 1982 with FY 1982 funds and will

continue through 1988: and a program for trapping fall chinook salmon at Ice Harbor Dam was conducted by unit personnel for WDF. Status reports on the BKD study are available at the LSRCP office (see Section XI). The fall chinook trapping is likely to be to conducted by WDF in FY 1986 now that Lyons Ferry is fully operational.

*A Study of Etiology of Early Mortality in Spring and Summer Chinook Salmon* was completed this fiscal year. It was done by the Tunison Laboratory in cooperation with the Iowa State Cooperative Fishery Research Unit with funds committed in FY 1983. This diet study was conducted in conjunction with related disease studies conducted by the State of Idaho (discussed above). A final report on the three-year study is available at the LSRCP Office (see Section XI). Funds were also provided to the Dworshak Fish Health Center for Disease Biologist activities with both State and Federally-operated LSRCP hatcheries.

## VII. OTHER COOPERATIVE PROGRAMS

Messers, Higgs and Herrig met with Nez Perce tribal biologists, the tribal council chairman, and our Dworshak FAO project leader at the reservation headquarters to discuss the Tribes requested involvement in the LSRCP.

LSRCP staff Higgs and Herrig toured LSRCP facilities in Idaho with Portland BPA staff: Palensky, Smith, and McLennan. We discussed the roles of FWS and BPA in the LSRCP and the potential for overlap of NW Power Act funded projects and LSRCP evaluation studies. We agreed that close cooperation would be necessary to prevent duplication, and that the programs could greatly benefit if information, equipment, etc. could be exchanged quickly and efficiently.

Dworshak NFH received 3.5 million green spring chinook salmon eggs from Idaho Power Company's Rapid River Hatchery. A cooperative agreement between FWS and IDFG is in place for excahnge of LSRCP and Idaho Power Company program eggs.

The State of Idaho is attempting to restore sockeye salmon runs to Redfish Lake. To assist in the restoration effort, facilities at Sawtooth are being made available for the IDFG sockeye salmon program.

The State of Oregon temporarily utilized several raceways at Irrigon Fish hatchery to hold spring and fall chinook salmon smolts scheduled for release in eastern Oregon.

Cooperative agreements are in place with State agencies for the temporary loan of equipment and vehicles between programs.

## VIII. MEETINGS

Meetings and Tours of FY-85

| | |
|---|---|
| 10/1-4/84 | Tour with Fred Vincent/Dave Bartling/(Ken Higgs) |
| 10/10-11/84 | Meeting on Spring Thing Study at Nampa Hatchery (Dan Herrig) |
| 10/15-18/84 | Tour with Lee Emery, FWS-CO (Dan Herrig) |
| 10/17/84 | Clearwater Anad. Meeting in Portland (Ken Higgs) |
| 10/23/84 | Meeting in Portland on A-76 (Ken Higgs) |
| 10/25/84 | Meeting in Portland with Bob Gable, ODFW (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 10/26/84 | Meeting in Olympia with WDF and WDG, Bob Gable (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 11/2/84 | Meeting in Boise with IDFG, Bob Gable, Dave Bartling (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 11/15/84 | Hatchery Coordination Meeting at Dworshak (Ken Higgs, Dan Herrig) |
| 11/16/84 | R.O. Evaluation at Dworshak (Ken Higgs, Yvonne Phillips) |
| 11/20/84 | R.O. Evaluation at Tehame-Colusa (Ken Higgs) |
| 11/28/84 | Annual Cooperative Research Unit Meeting in Moscow (Dan Herrig) |
| 11/29/84 | R.O. BKD Meeting with Dave Bartling (Ken Higgs) |
| 12/13/84 | Evaluation Coordinator's Meeting, Dworshak Dam, Ahsahka (Dan Herrig) |
| 1/14-18/85 | R.O. Evaluation Meeting in Portland (Ken Higgs) |
| 1/22-24/85 | R.O. Evaluation Meeting on Leavenworth NFH (Ken Higgs) |
| 1/29/85 | Evaluation Coordinators Meeting, Lyons Ferry Hatchery, ODFW, WDG, WDF, IDFG (Dan Herrig) |
| 2/20-21/85 | Evaluation Studies Meeting, WDG, WDF (Dan Herrig) |
| 2/255-27/85 | R.O. Evaluation in Hagerman (Ken Higgs) |
| 3/4/85 | Briefing R.O. (Ken Higgs) |

| | |
|---|---|
| 3/21/85 | ODFW Meeting in Portland (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 4/4/85 | Marking Trailer Design Meeting, WDG, WDF, ODFW (Dan Herrig) |
| 4/11/85 | Sawtooth Hatchery Meeting (Ken Higgs) |
| 4/30/85 | Evaluation Studies 5-year Plan Meeting, IDFG (Dan Herrig) |
| 5/1-2/85 | Participated in Spawning Activities at Wallowa FH, inspected Little Sheep and Big Canyon satellite facilities sites (Dan Herrig) |
| 5/7-8/85 | Traveled to Tucannon FH and satellite ponds (WDG) to inspect completed steelhead and salmon facilities (Dan Herrig) |
| 5/21/85 | Attend Hagerman Coordination Meeting (Ken Higgs, Dan Herrig) |
| 6/25/85 | Met with WDF in Olympia to negotiate changes in FY85 evaluation study budget (Dan Herrig) |
| 7/23/85 | Meeting with IDFG staff in Nampa to negotiate FY86 O&M budgets (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 7/24/85 | Inspection of Hagerman NFH and Hagerman SFH (Ken Higgs) |
| 7/30/85 | Met with IDFG to negotiate Evaluation Study proposed budget (Dan Herrig) |
| 7/31/85 | Meeting in R.O. with AFR and CGS (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 8/1-2/85 | Evaluation Study Coord. Meeting, Boise, FWS-FAO, Burnie Hill, CRITFC, WDF, WDG, ODFW, IDFG. Toured Sawtooth, East Fork (Dan Herrig) |
| 8/3/85 | Sawtooth Dedication (Ken Higgs, Dan Herrig, Yvonne Phillips) |
| 8/12-13/85 | Toured LSRCP facilities with Portland BPA staff facilities (Ken Higgs, Dan Herrig) |
| 8/14-15/85 | Hagerman Coordination Meeting (Ken Higgs) |
| 8/21-23/85 | Tour of Oregon LSRCP facilities and assist ODFW Evaluation Studies Coordinator with field work (Dan Herrig) |

| | |
|---|---|
| 8/27-29/85 | Met in Lapwai with Nez Perce tribal biologists, attended Corps Ozone study briefing in Walla Walla, inspected Irrigon and Wallowa Hatcheries and the Big Canyon, Little Sheep Creek Imnaha fish facility sites (Ken Higgs, Dan Herrig) |
| 9/10-11/85 | Meeting on Spring Thing Evaluation Study, Regional Office (Ken Higgs) |
| 9/17/85 | Clearwater Hatchery design meeting with IDFG and Corps, Walla Walla (Ken Higgs) |
| 9/18-19/85 | Tour of Sawtooth Hatchery with Fred Vincent (Ken Higgs) |
| 9/23/85 | Meeting with BPA personnel in Portland (Ken Higgs) |

## IX. TRAINING

Training was provided to the following employees:

Dan Herrig, Contract Administration, March 15-19, 1985, Management Concepts, Incorporated, Portland, Oregon.

Yvonne Phillips, Contracting for COR's, April 15-19, 1985, GSA Training Center, San Francisco, CA.

Ken Higgs, Dan Herrig, Yvonne Phillips, Short course on Cooperative Agreements, March 21, 1985, CGS staff, Portland, OR

## X. STAFFING

A total of 3.4 FTE staff years were employeed during the year. This total included 3.3 permanent FTE, and .10 student aid.

EMPLOYEE APPOINTMENTS:

Kelly Brady 3/4/85 - Student Aid
Tammy Froscher 6/9/85 - GS-4

EMPLOYEE PROMOTIONS:

Yvonne R. Phillips 1/20/85 - GS-7

EMPLOYEE RESIGNATIONS:

Karen A. Myers 11/6/84 - Student Aid
Kelly Brady 4/29/85 - Student Aid

PRESENT EMPLOYEES:

Kenneth R. Higgs, LSRCP Coordinator, GS-13
Daniel M. Herrig, Evaluation Studies Coordinator, GS-11
Yvonne R. Phillips, Contract Specialist, GS-7
Tammy A. Froscher, Clerk-Typist, GS-4

## XI. AVAILABLE REPORTS

U.S. Fish and Wildlife Service - Operation & Maintenance


Bjornn, T. C., and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1980 (80165). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pages.

Bjornn, T. C., and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1981 (81127). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pages.

Bjornn, T. C., and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1982 (82265). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pages.

Bjornn, T. C., and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1983 (83160). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pages.

Bjornn, T. C., and R. Ringe. 1985. Fall Chinook Trapping at Ice Harbor Dam in 1984 (84122). Idaho Cooperative Fishery Research Unit, University of Idaho, Moscow, Idaho. 6 pages.

Bruhn, D. 1983. Annual Report, Hagerman National Fish Hatchery. U.S. Fish and Wildlife Service, Hagerman, Idaho. 8 pages.

Olson, W. 1982. Annual Report Dworshak National Fish Hatchery. U. S. Fish and Wildlife Service, Ahsahka, Idaho. 47 pages.

Olson, W. 1984. Annual Report, Dworshak National Hatchery. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 50 pages.


U.S. Fish and Wildlife Service - Evaluation Studies


Bjornn, T. C. , C. M. Moffitt, J. D. Varley, D. Diggs, R. Austin, J. McClain, and J. Lientz. 1984. Annual Progress Report, Bacterial Kidney Disease in Chinook Salmon as Related to Hatchery Practices and Methods, 1982-1983 (0009-1514). U.S. Fish and Wildlife Service, Boise, Idaho. 68 pages.

Ketola, G. 1985. Study of the Etiology of Early Mortality in Spring Chinook Salmon (0009-1500). Tunison Lab. Fish Nutrition. U.S. Fish and Wildlife Service, Cortland, New York. 50 pages.

Miller, W. H., and D. Diggs. 1985. Annual Report, Dworshak FAO. U.S. Fish and Wildlife Service, Boise, Idaho. 4 pages.

Miller, W. H. and S. M. Noble. 1985. IHN-Water Supply Study, Dworshak NFH, 1985. U.S. Fish and Wildlife Service, FAO, Ahsahka, Idaho. 20 pages.

Smith, C. E. and M. E. Mueller. 1984. The Effects of Diet and Vitamin Supplementation on the Occurrence of Spring Thing in Summer Chinook Salmon. U.S. Fish and Wildlife Service, Bozeman, Montana. 13 pages.

Idaho Department of Fish and Game - Operations & Maintenance

Frew, T. 1985. Annual Report, McCall Hatchery, 1 Oct 1984 - 30 Sept 1985, (85022). Idaho Department of Fish and Game, McCall, Idaho. 4 pages.

Hutchinson, W. G. 1985. Annual Report, McCall Summer Chinook Hatchery, 1 Oct 1980 - 30 Sept 1981 (80002). Idaho Dept. Fish and Game, McCall Idaho. 28 pages.

Hutchinson, W. G. 1985. Annual Report, McCall Summer Chinook Hatchery, 1 Oct 1981 - 30 Sept 1982 (80002). Idaho Dept. Fish and Game, McCall, Idaho. 30 pages.

Hutchinson, W. G. 1983. Annual Report, McCall Hatchery, 1 Oct 1982 - 30 Sept 1983, (80002). Idaho Department of Fish and Game, McCall, Idaho. 3 pages.

Hutchinson, W. G. 1984. Annual Report, McCall Summer Chinook Salmon Hatchery, 1 Oct 1983 - 30 Sept 1984, (80002). Idaho Department of Fish and Game, McCall, Idaho. 6 pages.

Rodgers, T. L. 1984. Annual Report Sawtooth Hatchery, 1 Oct 1982 - 30 Sept 1983 (83103). Idaho Dept. Fish and Game, Boise, Idaho. 10 pages.

Rodgers, T. L. 1985. Annual Report Sawtooth Hatchery, 1 Oct 1983 - 30 Sept 1984 (83103). Idaho Dept. Fish and Game, Boise, Idaho. 20 pages.

Vaughn, R. L. 1985. Annual Report Magic Valley Steelhead Hatchery, 1 Oct 1983 - 30 Sept 1984 (84044). Idaho Dept. Fish and Game, Boise, Idaho. 6 pages.

Wimer, L. 1985. Annual Report, McCall Summer Chinook Salmon Hatchery, 1 Oct 1979 - 30 Sept 1980 (80002). Idaho Dept. Fish and Game, McCall, Idaho. 25 pages.

Idaho Department of Fish and Game - Evaluation Studies

Partridge, F. E. 1984. Fish Hatchery Evaluations - Idaho, Oct 1982 - Sept 1983 (83268). Idaho Dept. Fish and Game, Boise, Idaho. 52 pages.

Partridge, F. E. 1985. Effects of Steelhead Trout Smolt Size on Residualism and Adult Return Rates (83065). Idaho Dept. Fish and Game, Boise, Idaho. 26 pages.

Rohrer, R. L. and F. E. Partridge. 1985. Fish Hatchery Evaluations Idaho, 1 Sept 1983 - 30 Sept 1984 (84098). Idaho Dept. of Fish and Game, Boise, Idaho. 24 pages.

Thurow, R. 1985. Evaluation of the South Fork Salmon River Steelhead Fishery Restoration Program, 1 Sept 1984 - 31 Jan 1985 (84132). Idaho Department of Fish and Game, Boise, Idaho. 22 pages.

Thurow, R. 1985. South Fork Salmon River Fishery Restoration, 1 Feb 1985 - 30 Sept 1985 (85066). Idaho Department of Fish and Game, Boise, Idaho. 32 pages.

Oregon Department of Fish and Wildlife - Operations and Maintenance

Bauer, J. 1985. Annual Report Lookingglass Hatchery, 1 Oct 1983 - 30 Sept 1984 (83062). Oregon Dept. of Fish and Wildlife, Portland, Oregon. 2 pages.

Bauer, J. 1985. Annual Report Irrigon and Wallowa Hatcheries, 1 Oct 1983 - 30 Sept 1984 (84063). Oregon Dept. of Fish and Wildlife, Portland, Oregon. 2 pages.

Stratton, M. 1984. Annual Report Lookingglass Hatchery, 1 Oct 1982 - 30 Sept 1983 (83062). Oregon Dept. of Fish and Game, Portland, Oregon. 1 page.

Oregon Department of Fish and Wildlife - Evaluation Studies

Carmichael, R. W. and E. J. Wagner. 1984. Evaluation of Lower Snake River Compensation Plan Facilities in Oregon (83269). Oregon Dept. of Fish and Game, Portland, Oregon. 4 pages.

Washington Department of Fisheries - Operations and Maintenance

Ross, Carl. 1985. Annual Report Lyon's Ferry Salmon Hatchery, 1984. Washington Dept. of Fisheries, Olympia, Washington. 4 pages.

Washington Department of Fisheries - Evaluation Studies

Foster, R. W. 1981. Snake River Fall Chinook Egg Bank Program, 1 Oct 1980 - 30 Sept 1981 (81002). Washington Dept. of Fisheries, Olympia, Washington. 3 pages.

Hopley, B. 1984. Completion Report Snake River Fall Chinook Egg Bank Program, 1 Jan 1982 - 30 Sept 1982 (82027). Washington Dept. of Fisheries, Olympia, Washington. 5 pages.

Hopley, B. 1984. Completion Report Snake River Fall Chinook Egg Bank Program, 1 Oct 1982 - 30 Sept 1983 (82027). Washington Dept. of Fisheries, Olympia, Washington. 5 pages.

Hopley, B. 1984. Closing Report, Snake River Fall Chinook Egg Bank Program, 1 Oct 1983 - 30 Sept 1984 (82027). Washington Dept. of Fisheries, Olympia, Washington. 6 pages.

Seidel, P. 1984. Lower Snake River Compensation Hatchery Evaluation Study (82064). Washington Dept. of Fisheries, Olympia, Washington. 23 pages.

Seidel, P. and B. Bugert. 1985. Lower Snake River Compensation Plan, Hatchery Evaluation Study (84097). Washington Dept. of Fisheries, Olympia, Washington. FR1/LSR-86-02. 22 pages.

Washington Department of Game - Operation and Maintenance

Fischer-Benzon, H. von. 1984. Lyons Ferry Operating Statistics, 1 Oct 1982 - 30 Sept 1983 (83061). Washington Dept. of Game, Olympia, Washington. 2 pages.

Fischer-Benzon, H. von. 1985. Tucannon Hatchery Operating Statistics, 1 Oct 1983 - 30 Sept 1984 (83061). Washington Dept. of Game, Olympia, Washington. 3 pages.

Washington Department of Game - Evaluation Studies

Hallock, D. and G. Mendel. 1985. Annual Report Instream Habitat Improvement in Southeastern Washington (84121). Washington Dept. of Game, Olympia, Washington. FR1QSR-85-14. 113 pages.

Mendel, G. and K. Aufforth. 1985. Annual Report, Fall 1984 and Spring 1985 Steelhead Creel Surveys for the Snake and Lower Grande Ronde Rivers (84096). Washington Dept. of Game, Olympia, Washington. FR1QSR-85-25. 31 pages.

Schuck, M. 1985. Lyons Ferry Evaluation Study, 1983 Annual Report (83266). Washington Dept. of Game, Olympia, Washington. FR1/LSR-85-13. 31 pages.

TABLE 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES

| INSTALLATION/PROGRAM | CONSTRUCTION STATUS | 1985 FUNDS[a] | SPECIES[b] | NUMBER OF FISH PRODUCED | ADULT RETURNS[c] | ADULT MITIGATION GOALS |
|---|---|---|---|---|---|---|
| STATE OF IDAHO | | | | | | |
| McCall SFH | Complete | $343,100.00 | SuCS | 564,405 | 2,237 | 8,000 |
| South Fork Satellite | - | - | - | - | - | - |
| Sawtooth FH | Complete | $502,000.00 | SpCS | 420,060 d | 2,709 | 19,232 |
| East Fork Satellite/LSRCP Mgt. | - | - | - | - | - | - |
| Magic Valley FH | 10/87 | $106,400.00 | STT | 231,990 e | - | 11,660 |
| Clearwater Anadromous | 11/88 | - | SpCS | - | - | 12,200 |
| | | - | STT | - | - | 14,004 |
| STATE OF OREGON | | | | | | |
| Lookingglass FH | Complete | $275,459.00 | SpCS | 1,827,035 | 452 | 9,072 |
| Imnaha Satellite | - | $17,341.00 | - | - | - | - |
| Irrigon FH | Complete | $347,611.00 | STT | 458,578 | 719 | 11,184 |
| Wallowa SFH | Complete | $71,051.00 | STT | - | - | - |
| Little Sheep Satellite | - | $4,094.00 | - | - | - | - |
| STATE OF WASHINGTON | | | | | | |
| Lyons Ferry FH (Dept. Fish) | Complete | $302,502.00 | SpCS | - | - | 1,152 |
| | | | FCS | 1,189,692 | 589 | 18,300 |
| Lyons Ferry FH (Dept. Game) | Complete | $661,852.00 | STT | 1,202,947 | 217 | 4,656 |
| | | | RBT | 218,055 | - | - |
| Tucannon Satellite | - | | STT | - | - | - |
| Tucannon SFH | Complete | $226,000.00 | RBT | - | - | - |
| FISH & WILDLIFE SERVICE | | | | | | |
| Hagerman NFH | Complete | $509,900.00 | STT | 2,213,098 | 618 | 13,600 |
| | | | FCS | 128,229 f | - | - |
| Dworshak NFH | Complete | $153,800.00 | SpCS | 1,137,139 | 855 | 9,000 |
| Dworshak FHC | - | $20,000.00 | | | | |
| YCC PROGRAM | - | $60,000.00 | | | | |
| REGIONAL OFFICE | - | $100,000.00 | | | | |
| LSRCP MANAGEMENT/COORD. | - | $140,000.00 | | | | |
| EVALUATION STUDIES | - | $925,197.00 | | | | |
| TOTALS | | $4,766,307.00 | | | | |

[a] Total includes $280,680 FY-84 carryover funds.
[b] RBT-Rainbow Trout/ FCS-Fall Chinook Salmon/ SpCS-Spring Chinook Salmon/ SuCS-Summer Chinook Salmon/ STT-Steelhead Trout
[c] Returns to hatchery rack only.
[d] Fish reared at McCall FH for Sawtooth and released at Sawtooth.
[e] Fish reared at Hagerman NFH for Magic Valley.
[f] Trapped at Ice Harbor Dam, fish reared for Lyons Ferry program.
[g] Table 2 shows breakdown of Evaluation Studies For FY 1985.

Table 2. LOWER SNAKE RIVER COMPENSATION PLAN EVALUATION STUDIES

| State/Study | 1985 Funds | Species Studies |
|---|---|---|
| **Idaho Dept. of Fish and Game** | | |
| Hatchery Evaluation | $ 78,550 | Chinook, Steelhead |
| I.D. of Stocks (tagging) | 124,844 | Chinook, Steelhead |
| Hatchery-Wild Study (creel) | 51,460 | Steelhead |
| S.F. Salmon River | 51,750 | Steelhead |
| Disease/Nutrition | 0[a] | Chinook, steelhead |
| "Spring Thing" Study | 0[a] | Chinook, (summer) |
| Subtotal | $306,604 | |
| **Oregon Dept. of Fish and Wildlife** | | |
| Hatchery Evaluation | $179,291 | Chinook, steelhead |
| Pre-smolt Release (tagging) | 16,800 | Chinook |
| Reprogramming Smolts (tagging) | 20,900 | Chinook |
| Subtotal | $216,991 | |
| **Washington Dept. of Fisheries** | | |
| Lyons Ferry Evaluation | $209,498[b] | Chinook |
| **Washington Dept. of Game** | | |
| Lyons Ferry Evaluation | $131,156 | Steelhead (incl. resident trout) |
| Instream Habitat Evaluation | 5,648 | Resident Trout |
| Subtotal | $136,804 | |
| **Dworshak Fisheries Assistance Office (FWS)** | | |
| Hatchery Coordination | $ 33,000 | Chinook, steelhead |
| IHN Study | 22,300 | Steelhead |
| Subtotal | $ 55,300 | |
| **Other FWS Offices** | | |
| BKD Study | 0[a] | Chinook |
| "Spring Thing" Study | 0[a] | Chinook |
| Total | $925,197 | |

[a] Studies conducted in 1985 with funds appropriated in previous years.

[b] Includes capital equipment purchases for marking trailers, tagging machines, and a smolt trap totaling $87,400.

Table 3. Lower Snake River Fish and Wildlife Compensation Plan Fish Hatchery Facilities.

| Hatchery | Pertinent Data: Fish Type | Pounds | Construction Cost ($1,000) | Date of Completion | Satellite Facilities |
|---|---|---|---|---|---|
| Lookingglass (ODFW) | Spring Chinook | 69,600 | 4,965 | Dec 82 | Big Canyon Creek<br>Imnaha<br>Lookingglass<br>Wallowa Hatchery |
| Irrigon (ODFW) | Steelhead | 279,600 | 11,292 | Apr 85 | Wallowa Hatchery<br>Big Canyon Creek<br>Lookingglass<br>Little Sheep Creek |
| Lyons Ferry | | | | | |
| Phase I WDG | Steelhead<br>Trout | 116,400<br>45,000 | | Phase I-Sep 82 | Cottonwood<br>Dayton Pond |
| Phase II WDF | Fall Chinook<br>Spring Chinook | 101,800<br>8,800 | 22,257 | Phase II-Sep 84 | Tucannon Hatchery<br>Curl Lake |
| Sawtooth (IDFG) | Spring Chinook | 149,000 | 12,163 | Jan 85 | East Fork Salmon River<br>Sawtooth |
| Dworshak (FWS) | Spring Chinook | 70,000 | 1,710 | Jul 82 | Dworshak |
| Clearwater (IDFG) | Steelhead<br>Spring Chinook | 350,000<br>91,300 | 26,443 | Nov 88 | Red River<br>Crooked River<br>Powell |
| Magic Valley (IDFG) | Steelhead | 291,500 | 9,876 | Nov 87 | Sawtooth<br>East Fork Salmon River |
| Hagerman (FWS) | Steelhead | 340,000 | 8,486 | Jun 84 | Sawtooth<br>East Fork Salmon River |
| McCall (IDFG) | Summer Chinook | 61,300 | 5,053 | Jul 80 | South Fork Salmon River |